

Monterey Bay National Marine Sanctuary's TeamOCEAN Program Report 2005



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Introduction

TeamOCEAN (Team Ocean Conservation Education Action Network) Programs are run in two of the 13 national marine sanctuaries: Florida Keys and Monterey Bay National Marine Sanctuaries. Many sanctuaries have volunteer programs, however these are the only two specifically named as TeamOCEAN Programs. For both sanctuaries the focus of the program is to protect the natural resources found in each location while allowing for a rich and meaningful experience of the visitors to that marine sanctuary. These goals can be achieved in various ways and between these two national marine sanctuary locations; there are three very different modes through which the goals of the program are achieved. For the Florida Keys National Marine Sanctuary (FKNMS), the critical resource needing interpretation and protection is the coral reef ecosystem, which is a very fragile but stationary resource. The TeamOCEAN Program in FKNMS utilizes sanctuary and private boats with trained volunteers to station themselves "... at heavily visited reef sites throughout the Keys during peak recreational boating seasons in order to educate and inform other boaters about the unique nature of the coral reef habitat, share their knowledge of the best approach to certain areas, demonstrate the use of a mooring buoy, and give out various safety information."

For the Monterey Bay National Marine Sanctuary (MBNMS) the resources needing protection are the marine mammal populations finding refuge in kelp forests, rocky outcrops, beaches and estuaries of the MBNMS. This seasonal interpretive naturalist program was designed to provide ocean users with information about the MBNMS, its' programs, natural history of inhabitants and guidelines on how to view these inhabitants respectfully without disturbing them, or changing their natural behavior. MBNMS has two TeamOCEAN Programs; a land based program to raise public awareness about the elephant seal population at Arroyo Laguna and an on the water marine mammal harassment prevention program in Monterey Bay.

TeamOCEAN staff and docents do not write tickets or hand out citations for violations, instead the program encourages proper viewing etiquette through interpretive enforcement. The members of TeamOCEAN Kayaker Outreach Program interact in a friendly, positive, non-confrontational manner to prevent harassment situations while interpreting the sanctuary's resources and answering questions about its' ecology and wildlife.

The MBNMS's TeamOCEAN Elephant Seal Program 2005

Background

The TeamOCEAN Elephant Seal Outreach program is designed to prevent harassment of elephant seals at a major haul out site in the southern region of the Monterey Bay National Marine Sanctuary. Paid contractors work with volunteers in 6-hour shifts on weekends during the elephant seal breeding season, January to March. Since 2001, National Marine Sanctuary staff and contractors have collaborated with the non-profit organization, Friends of the Elephant Seal, in a public awareness campaign at Arroyo Laguna, a popular windsurfing spot, located 6 miles south of Point Piedras Blancas in central California. The program has been effective at reducing harassment of elephant seals, educating local residents, and encouraging safe and responsible wildlife viewing practices.

Program History

The program began as a component of the volunteer-based organization, the Friends of the Elephant Seal (FES). In 2000, harassment of elephant seals at Arroyo Laguna had become so severe that FES docents requested aid from local law enforcement agencies. MBNMS and State Parks responded with a part-time law enforcement ranger assigned to patrol the area during peak season, and with the development of a TeamOCEAN traffic redirection program.

MBNMS contractors and FES volunteers worked in pairs as TeamOCEAN Representatives. They advised tourists and visitors at Arroyo Laguna to go to the correct elephant seal viewing site 3 miles north (Vista Point 3), and to view elephant seals safely and at a respectful distance. Visitors were also informed that law enforcement officers were patrolling the area and would issue citations if harassment of elephant seals were observed. The TeamOCEAN program started the first week in January and ran through the middle of March, with representatives working at Arroyo Laguna from 10 - 4 on weekends and holidays.

Staffing & Costs

FES docents donate their time as part of their ongoing commitment to protect the elephant seals and safely enhance the public's enjoyment. However, docent resources are focused on interpretation and harassment prevention at the designated viewing area, Vista Point 3, during the peak pupping season, and there are not enough docents to cover all the shifts at Arroyo Laguna.

Since the TeamOCEAN program's inception, MBNMS has provided trained contractors and staff to assist with the program. Staff handles the scheduling duties, hire and train

contractors and oversee the program. Contractors undergo a 4-hour paid training meeting prior to participating in the program. Contractors are paid \$10.00 per hour and work in teams, paired with FES docents. A summary of hours contributed by volunteers and contractors, as well as the costs to MBNMS for the program are outlined in Table 1.

Results:

Table 1 and Table 2 provide a summary of the data collected for the 5-year program. With a total of over 16,000 contacts made, it is apparent that thousands of people come to Arroyo Laguna each year to view elephant seals. Without the TeamOCEAN program, some of these people would have caused harassment incidents. "Redirecting" these visitors to proper viewing areas enhances their enjoyment while significantly reducing harassment of the seals.

Table 2 shows that the number of contacts reached a peak of 5,191 in 2003, then dropped to 3,639 in 2004, and dropped again in 2005, with 1,768 contacts. Several factors must be considered with these figures. Weather influences attendance and visitation throughout the area. It is possible that in 2004, after 3 successful years of the TeamOCEAN program, many people who had visited the area in the past had learned to go to other viewing sites, and avoided Arroyo Laguna. In 2005, the number of total TeamOCEAN hours dropped to 230, down from 297 in 2004. With fewer TeamOCEAN hours of attendance, fewer contacts were made.

Update:

In 2005, State Parks took over management of Arroyo Laguna and the area used by the elephant seal colony, and created its own traffic redirection program based upon the successful TeamOCEAN model. State Park rangers and staff will be in charge of controlling harassment of elephant seals for the 2005-2006 elephant seal season and for the future.

This program provides an example of MBNMS working cooperatively with State Parks and Friends of the Elephant Seal on a program that filled an important need for five years. Now that the need has been fully addressed by State Parks, the program is no longer required, and MBNMS staff efforts and contractor expenditures can be directed elsewhere.

Table 1: Hours/Costs for TeamOCEAN Elephant Seal Program at Arroyo Laguna

| Year | Dates | Number of Days | Total Hours | FES Volunteer Hours | MBNMS Contractor Hours | MBNMS Costs |
|--------------|--------------|-----------------------|--------------------|----------------------------|-------------------------------|--------------------|
| 2001 | 1/25-3/10 | 13 | 156 | 78 | 78 | \$ 780.00 |
| 2002 | 1/6-3/13 | 21 | 262 | 98 | 164 | \$1,640.00 |
| 2003 | 1/4-3/2 | 20 | 248 | 85 | 163 | \$1,630.00 |
| 2004 | 1/3-3/15 | 24 | 297 | 88 | 209 | \$2,090.00 |
| 2005 | 1/1-3/13 | 20 | 230 | 42 | 188 | \$1880.00 |
| Total | | 98 | 1193 | 391 | 802 | \$8020.00 |

Table 2: Summary of Contacts at Arroyo Laguna, 2001-2005

| Year | Dates | Number of Days | Number of Contacts | January Average | February Average | March Average |
|--------------|--------------|-----------------------|---------------------------|------------------------|-------------------------|----------------------|
| 2001 | 1/25-3/10 | 13 | 2,000 | 225* | | |
| 2002 | 1/6-3/13 | 21 | 3,900 | 230 | 201 | 42 |
| 2003 | 1/4-3/2 | 20 | 5,191 | 304 | 293 | 198 |
| 2004 | 1/3-3/15 | 24 | 3,639 | 162 | 231 | 63 |
| 2005 | 1/1-3/13 | 20 | 1,768 | 77 | 94 | 110 |
| Total | | 98 | 16,498a | 200 | 205 | 103 |

*Monthly averages were not recorded in 2001.

The MBNMS's TeamOCEAN Kayaker Outreach Program 2005

Background

The TeamOCEAN Kayaker Outreach program is a program designed to give one-on-one information to sanctuary users on proper wildlife viewing etiquette and general sanctuary information. Four paid staff lead a group of volunteers during each six- hour shift, three times a week in two locations, Elkhorn Slough in Moss Landing and Cannery Row in Monterey, CA. During shifts both volunteers and staff collect information about reasons for interactions with sanctuary users, what type of disturbance if any, is seen, and how many and what type of animals were involved in any disturbances. Dedicated staff and volunteers provide a critical link between sanctuary regulations and users in a personal and caring manner without the need for tickets or law enforcement intervention. The program has been in operation since 2000 and continues to grow each year with more volunteers and more sanctuary users contacted.

Volunteers

In the beginning of 2005, recruitment began for the new season with an informational presentation and sign up for training classes. Training lecture topics included: An overview of the Monterey Bay National Marine Sanctuary, birds of the Monterey area by Hannah Nevins from Moss Landing Marine Lab and a weekend field trip to identify birds found in Elkhorn Slough, marine mammals of the Monterey area by Michele Roest from the MBNMS, oceanography by Kevin Raskoff of CSUMB, basic kelp forest ecology, a presentation by NOAA Law Enforcement Officer Bob Yerena on regulations and the enforcement role of volunteers, radio and safety procedures, how to fill out the data sheets, an introduction to Elkhorn Slough by Jacquie Kourassis of ESNERR, and interpretation techniques. Training lectures are open to all TeamOCEAN volunteers, as in previous years, 2005 had a few returning volunteers attending lectures.

New volunteers also received a kayak safety/training class donated by Monterey Bay Kayaks. The class covered topics such as proper paddling techniques, proper orientation to waves, self bail-outs, and partner assists. The safety class was an all-day on-the-water class after which the students received a certification card, certifying their participation and acceptable performance of the required skills.

In May 2005, 18 new volunteers joined the TeamOCEAN Kayak Outreach Program roster. In informal discussions with new volunteers, over all satisfaction with all aspects of the training program were communicated. A few ideas for improving the training were given and will be incorporated into the next training season in 2006.

On The Water Results

In 2005 TeamOCEAN staff and volunteers approached 3373 people in Monterey and 2584 in Elkhorn Slough bringing the six-year total of people who have had contact with TeamOCEAN to 23,095. Volunteers in 2005 contributed 1,092 hours with a value of over \$10,000.

While TeamOCEAN's primary goal is to educate sanctuary users, team members have been able to collect useful data over the past number of years, (see Tables 1 and 2). For the past three years (2003-2005) volunteers and staff collected data using data sheets developed for the program that allow easy recording of animal species, observed behavior, number of individuals exhibiting a specific behavior, user types, and interaction types.

Interaction types for Sanctuary users are classified as:

- Informational- users are unaware of the Sanctuary as well as the local wildlife they might encounter.
- Pre-disturbance- a sanctuary user is on a direct course to come close enough to wildlife to disturb, a TeamOCEAN member will head off and explain the situation.
- Saw disturbance- a sanctuary user disturbed wildlife and may not know their actions either caused the disturbance or they may be unaware of the implications of the disturbance. A TeamOCEAN member will talk with the user and help them to understand the situation.
- Safety warning- a sanctuary user is doing something that may endanger themselves while on the water. A TeamOCEAN member will explain the implications of their actions in order to have them discontinue it.
- No approach- on rare occasions when a disturbance has been noted it is impossible to catch up to the sanctuary user that has caused the disturbance; or perhaps the user is known to be volatile or argumentative. In either case the TeamOCEAN member does not approach but does make note of the disturbance and the non-approach.

The highest numbers of interaction types were for informational purposes with 1076 or 97% in Monterey and 911 or 87% in Elkhorn Slough (Tables 1 & 2).

Animal behaviors noted in the data sheets are:

- Head raise- where animal(s) raises only the head when alerted. This is considered a mild reaction to a disturbance.
- Flees with out diving- where animal(s) swims away, may or may not keep an eye on the reason for swimming away.
- Flees with diving- for animal(s) already in the water, dives to get away from cause of disturbance.
- Flush- for animal(s) out of water that rush into water to get away from cause of disturbance. This is considered a severe reaction to a disturbance.

In 2005, 88 interactions in Monterey and 88 in Elkhorn Slough were to prevent an imminent disturbance. Elkhorn Slough had 53 separate disturbances observed and Cannery Row had 42, from head raises to total flushings (Table 6).

Summary

The TeamOCEAN Kayaker Outreach Program has proven to be an effective outreach tool for the Monterey Bay National Marine Sanctuary. By reaching over 23,000 people in the past 6 years, TeamOCEAN staff and volunteers have increased knowledge of the sanctuary, the sanctuary's inhabitants and proper viewing etiquette for these inhabitants. There is no other outreach program reaching this many people for the MBNMS in a one-on-one manner. There is undeniable resource protection benefit of the program by preventing numerous wildlife disturbances and educating those who might potentially disturb wildlife needlessly. By being the face of the sanctuary on the water and interacting with sanctuary users directly, TeamOCEAN kayakers provide a necessary educational link between sanctuary regulations to the actual users of the sanctuary itself. The 2005 season continues to highlight the effectiveness of the TeamOCEAN Program. With increasing numbers of people reached and increasing numbers of disturbances prevented, the TeamOCEAN Program highlights the effectiveness of a one-to-one approach to wildlife disturbance and Sanctuary education.

In the five-year report for the TeamOCEAN program some recommendations were laid out in order to make the program run more smoothly, help retain volunteers, and expand the reach of the program. While not all of the recommendations were implemented this past season a few were instituted with much success. First, volunteer training was extended from four weeks to eight, and decreased from 3 hours each time to 2 hours. This allowed more face to face time with each volunteer, more time to practice roles as a TeamOCEAN Naturalist, more time to teach on different subjects, and the addition of weekend field trips. All of these changes made for a stronger team, and a more confident team once on the water. For the upcoming season, training will remain at 8 weeks with more field trips to help reinforce topics learned in lectures.

Another suggestion from the five-year report was to have an open kayak day before the kayak safety classes. With the help of Monterey Bay Kayaks two days were reserved and were attended by interested new volunteer trainees. The free kayak days were designed to help any inexperienced kayakers to get a taste of time on the water, all that attended felt as though the day was well worth the effort, it gave new volunteers an idea of paddling for long periods and as on one day, during windy and wavy conditions.

The contracts for the four staff members were handled this year for the first time through the Monterey Bay Sanctuary Foundation, which allowed the staff to be paid in a timely and efficient manner. This solution to the contracting issue was well appreciated by the staff and continued administration of the contracts by the MBSF is recommended.

Some suggestions from the five-year report were not accomplished in 2005. First was the expansion to Lover's Point in Pacific Grove. While there are some concessionaires at Lover's Cove, where the team would most likely launch from, no one was willing to allow TeamOCEAN to store equipment. Space is very tight in each of the retail businesses so another option was looked into- having a trailer with a locker that could be parked in the public parking area. Funding for a trailer was not found, until more funds are available the expansion to Lover's Cove may be on hold. However a few kayak businesses in Santa Cruz expressed interest in having the TeamOCEAN program operate through their shops, this will be explored for the 2006 season.

A suggestion was made last year for TeamOCEAN to coordinate with other volunteer programs in the area to enhance retention of volunteers from one year to the next, and to give volunteers an opportunity to continue volunteering even in the off-season. This is being explored for the coming 2006 season.

Overall the TeamOCEAN Program continues to grow with new volunteers, more people contacted on the water and more wildlife observed at a respectable distance. The TeamOCEAN Program serves an important function in the near shore community, as an ambassador for the Monterey Bay National Marine Sanctuary, as a water-borne information booth for visitors and locals alike, and lastly as protection for the numerous marine mammals found in along the central California coastline.

Table 1: 2001-2005 Data for Cannery Row in Monterey, CA

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Total |
|---------------------------------|---------------|------------------|------|------|------|------|--------|
| Number of days on the water | 22 b/t M & ES | 16.5 | 31 | 42 | 48 | 51 | 188.5 |
| Number of hours on the water | | 180.4 | 269 | 612 | 583 | 972 | 2616.4 |
| Number of volunteer hours | | | 83 | 383 | 320 | 534 | 1320 |
| Number of approaches | 9 | 679 | 695 | 1301 | 1160 | 1115 | 4959 |
| Number of people approached | | 1018 | 1671 | 3226 | 2901 | 3373 | 12189 |
| | | | | | | | |
| Interaction reason types | | * | | | | | |
| Informational | | | 617 | 1139 | 1031 | 1076 | 3863 |
| Prevent disturbance | 4 | | 45 | 96 | 75 | 88 | 304 |
| Saw disturbance | 5 | | 25 | 50 | 51 | 46 | 172 |
| Saw disturbance but no approach | | | | 10 | 12 | 3 | 25 |
| | | | | | | | |
| Number of disturbances noted | 5 | * | 30 | 68 | 77 | 42 | 187 |
| Enforcement calls | | 7 other agencies | 1 | 1 | 0 | 0 | 0 |
| | | | | | | | |
| Types of ocean users | | * | | | | | |
| Rental Kayaks | 7 incidents | | 589 | 1065 | 960 | 1027 | 3641 |
| Private Kayaks | 2 incidents | | 59 | 163 | 147 | 173 | 542 |
| Pedestrians | | | | 35 | 26 | 33 | 94 |
| Boaters | | | 6 | 14 | 12 | 18 | 50 |
| Canoe | | | 0 | 0 | 0 | 0 | 0 |
| Divers | | | 3 | 14 | 6 | 16 | 39 |
| Kayak Divers | | | 9 | 5 | 1 | 3 | 18 |
| Jet skis | | | 1 | 1 | 0 | 0 | 2 |

* data not collected

Table 2: 2001-2004 Data for Elkhorn Slough in Moss Landing, CA

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Totals |
|---------------------------------|-------------|------------------|------|------|------|------|--------|
| Number of days on the water | 22 b/t M&ES | 13.5 | 30 | 51 | 49 | 53 | 196.5 |
| Number of hours on the water | | 147.6 | 280 | 454 | 436 | 1020 | 2337.6 |
| Number of volunteer hours | | | 80 | 166 | 200 | 558 | 1004 |
| Number of approaches | 3 | 556 | 714 | 1241 | 910 | 1051 | 4475 |
| Number of people approached | * | 833 | 1858 | 3360 | 2272 | 2584 | 10907 |
| | | | | | | | |
| Interaction reason types | | * | | | | | |
| Informational | | | 648 | 1130 | 860 | 911 | 3549 |
| Prevent disturbance | | | 27 | 57 | 28 | 84 | 196 |
| Saw disturbance | 3 | | 35 | 11 | 21 | 30 | 97 |
| Saw disturbance but no approach | | | | 13 | 17 | 4 | 34 |
| | | | | | | | |
| Number of disturbances noted | 3 | * | 37 | 59 | 39 | 53 | 188 |
| Enforcement calls | | 3 other agencies | 1 | 1 | 1 | 0 | 6 |
| | | | | | | | |
| Types of ocean users | | * | | | | | |
| Rental Kayaks | 1 incident | | 519 | 959 | 631 | 667 | 2776 |
| Private Kayaks | 2 incidents | | 169 | 318 | 270 | 218 | 975 |
| Pedestrians | | | | 12 | 6 | 31 | 49 |
| Boaters | | | 9 | 21 | 37 | 37 | 104 |
| Canoe | | | 0 | 14 | 0 | 0 | 14 |
| Divers | | | 1 | 0 | 0 | 0 | 1 |
| Kayak Divers | | | 1 | 0 | 0 | 0 | 1 |
| Jet skis | | | 0 | 1 | 0 | 0 | 1 |

* data not collected

Table 3: Disturbances of Sea Otters (*Enhydra lutris*) for Cannery Row in Monterey, CA

| Sea Otters | 2002 | 2003 | 2004 | 2005 |
|--|------|------|------|------|
| Total # of head raises | 12 | 32 | 28 | 13 |
| Total # of animals showing head raises | 57 | 70 | 42 | 38 |
| | | | | |
| Total # of flees w/o diving | 4 | 2 | 4 | 4 |
| Total # of animals showing fleeing w/o diving | 11 | 5 | 4 | 14 |
| | | | | |
| Total # of flees with diving | 7 | 5 | 6 | 3 |
| Total # of animals showing fleeing with diving | 29 | 10 | 9 | 5 |
| | | | | |
| Total # of flushes | 1 | 3 | 2 | 1 |
| Total # of animals showing flushes | 10 | 15 | 2 | 5 |
| | | | | |
| Total # of animals disturbed | 107 | 100 | 57 | 62 |
| Total # of disturbances of all types | 24 | 42 | 40 | 21 |
| Average # of animals disturbed each time | 4.46 | 2.38 | 1.43 | 2.95 |

Table 4: Disturbances of Sea Lions (*Zalophus californianus*) for Cannery Row in Monterey, CA

| Sea Lions | 2002 | 2003 | 2004 | 2005 |
|--|------|------|------|------|
| Total # of head raises | 0 | 2 | 2 | 7 |
| Total # of animals showing head raises | 0 | 3 | 6 | 46 |
| | | | | |
| Total # of flees w/o diving | 0 | 0 | 1 | 1 |
| Total # of animals fleeing w/o diving | 0 | 0 | 1 | 5 |
| | | | | |
| Total # of flees with diving | 1 | 1 | 2 | 2 |
| Total # of animals fleeing with diving | 5 | 2 | 10 | 13 |
| | | | | |
| Total # of flushes | 7 | 3 | 4 | 3 |
| Total # of animals showing flushes | 175 | 29 | 19 | 21 |
| | | | | |
| Total # of animals disturbed | 180 | 34 | 36 | 85 |
| Total # of disturbances of all types | 8 | 6 | 9 | 13 |
| Average # of animals disturbed each time | 22.5 | 5.67 | 4 | 6.54 |

Table 5: Disturbances of Harbor Seals (*Phoca vitulina*) for Cannery Row in Monterey, CA

| Harbor Seals | 2002 | 2003 | 2004 | 2005 |
|--|------|------|------|------|
| Total # of head raises | 1 | 15 | 16 | 5 |
| Total # of animals showing head raises | 1 | 24 | 36 | 18 |
| | | | | |
| Total # of flees w/o diving | 0 | 0 | 0 | 1 |
| Total # of animals fleeing w/o diving | 0 | 0 | 0 | 2 |
| | | | | |
| Total # of flees with diving | 0 | 0 | 0 | 0 |
| Total # of animals fleeing with diving | 0 | 0 | 0 | 0 |
| | | | | |
| Total # of flushes | 0 | 1 | 0 | 2 |
| Total # of animals showing flushes | 0 | 1 | 0 | 3 |
| | | | | |
| Total # of animals disturbed | 1 | 25 | 36 | 23 |
| Total # of disturbances of all types | 1 | 16 | 16 | 8 |
| Average # of animals disturbed each time | 1 | 1.56 | 2.25 | 2.88 |

Table 6: Disturbances of Sea Otters (*Enhydra lutris*) for Elkhorn Slough in Moss Landing, CA

| Sea Otters | 2002 | 2003 | 2004 | 2005 |
|--|------|------|------|------|
| Total # of head raises | 1 | 0 | 1 | 7 |
| Total # of animals showing head raises | 2 | 0 | 1 | 20 |
| | | | | |
| Total # of flees w/o diving | 0 | 3 | 0 | 7 |
| Total # of animals showing fleeing w/o diving | 0 | 3 | 0 | 20 |
| | | | | |
| Total # of flees with diving | 7 | 3 | 3 | 7 |
| Total # of animals showing fleeing with diving | 11 | 3 | 3 | 16 |
| | | | | |
| Total # of flushes | 0 | 0 | 0 | 3 |
| Total # of animals showing flushes | 0 | 0 | 0 | 12 |
| | | | | |
| Total # of animals disturbed | 13 | 6 | 4 | 68 |
| Total # of disturbances | 8 | 6 | 4 | 24 |
| Average # of animals disturbed each time | 1.63 | 1 | 1 | 2.83 |

Table 7: Disturbances of California Sea Lions (*Zalophus californianus*) for Elkhorn Slough in Moss Landing, CA

| Sea Lions | 2002 | 2003 | 2004 | 2005 |
|--|------|------|------|------|
| Total # of head raises | 0 | 3 | 0 | 0 |
| Total # of animals showing head raises | 0 | 13 | 0 | 0 |
| | | | | |
| Total # of flees w/o diving | 0 | 0 | 0 | 0 |
| Total # of animals showing fleeing w/o diving | 0 | 0 | 0 | 0 |
| | | | | |
| Total # of flees with diving | 0 | 0 | 0 | 0 |
| Total # of animals showing fleeing with diving | 0 | 0 | 0 | 0 |
| | | | | |
| Total # of flushes | 0 | 2 | 0 | 0 |
| Total # of animals showing flushes | 0 | 12 | 0 | 0 |
| | | | | |
| Total # of animals disturbed | 0 | 15 | 0 | 0 |
| Total # of disturbances | 0 | 5 | 0 | 0 |
| Average # of animals disturbed each time | 0 | 3 | 0 | 0 |

Table 8: Disturbances of Harbor Seals (*Phoca vitulina*) for Elkhorn Slough in Moss Landing, CA

| Harbor Seals | 2002 | 2003 | 2004 | 2005 |
|---|-------|------|------|-------|
| Total # of head raises | 11 | 29 | 16 | 15 |
| Total # of animals showing head raises | 112 | 157 | 158 | 221 |
| | | | | |
| Total # of flees w/o diving | 1 | 0 | 2 | 1 |
| Total # of animals showing fleeing w/o diving | 1 | 0 | 4 | 5 |
| | | | | |
| Total # of flees with diving | 1 | 0 | 1 | 1 |
| Total # of animals showing flees with diving | 1 | 0 | 1 | 40 |
| | | | | |
| Total # of flushes | 4 | 8 | 8 | 5 |
| Total # of animals showing flushes | 66 | 59 | 234 | 217 |
| | | | | |
| Total # of animals disturbed | 180 | 216 | 397 | 483 |
| Total # of disturbances | 17 | 37 | 27 | 22 |
| Average # of animals disturbed each time | 10.59 | 5.84 | 14.7 | 21.95 |